WHAT IS CLAIMED IS:

Sub B1

1. An isolated polypeptide, which is a calmodulin-dependent serine/threonine kinase, or a fragment thereof, selected from the group consisting of:

(A) a polypeptide which is capable of inducing cell death (apoptosis) and comprises the amino acid sequence of SEQ ID NO:2;

(B) a polypeptide which has a property being capable of inducing cell death and has at least 85% sequence identity to the amino acid sequence of SEQ ID NO:2;

(C) a fragment of a polypeptide of SEQ ID NO:2 which is capable of inducing cell death;

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(D) a fragment which is capable of inducing cell death and has at least 85% sequence identity to fragment (C);

(E) a fragment of a polypeptide of SEQ ID NO:2 which lacks the property of being capable of inducing cell death and which inhibits the ability of polypeptide (A) or (B) to induce cell death; and

(F) a fragment which lacks the property of being capable of inducing cell death and which inhibits the ability of polypeptide (A) or (B) to induce cell death, said fragment having at least 85% sequence identity to fragment (E).

2. An isolated DNA molecule comprising a nucleotide sequence encoding the polypeptide or fragment thereof according to claim 1.

3. The isolated DNA molecule according to claim 1, wherein said nucleotide sequence encodes the amino acid sequence of SEQ ID NO:2.

4. The isolated DNA molecule according to claim 3, wherein said nucleotide sequence corresponds to nucleotides 62 to 1141 of SEQ ID NO:1.

5. The isolated DNA molecule according to claim 3, which consists of the nucleotide sequence corresponding to nucleotides 62 to 1141 of SEQ ID NO:1.

6. An isolated DNA molecule which hybridizes to the DNA molecule of claim 5 under moderately stringent conditions and encodes a calmodulin-dependent serine/threonine kinase having the property of being capable of inducing cell death.

7. An isolated DNA molecule which hybridizes to the DNA molecule of claim 5 under highly stringent conditions and encodes a calmodulin-dependent serine/threonine kinase having the property of being capable of inducing cell death.

SUB B2 8. A polypeptide consisting of an amino acid sequence selected from the group consisting of amino acid residues 13 to 275 of SEQ ID NO:2 and an amino acid sequence having at least 85% sequence identity to residues 13 to 275 of SEQ ID NO:2.

9. An isolated DNA molecule comprising a nucleotide sequence encoding the polypeptide of claim 8.

10. The isolated DNA molecule according to claim 9, wherein said nucleotide sequence encodes the amino acid sequence corresponding to residues 13 to 275 of SEQ ID NO:2.

11. The isolated DNA molecule according to claim 10, wherein said nucleotide sequence is selected from the group consisting of nucleotides 98 to 886 of SEQ ID NO:1 and a nucleotide sequence which hybridizes to nucleotides 98 to 886 of SEQ ID NO:1 under moderately stringent conditions.

12. The isolated DNA molecule according to claim 11, wherein said nucleotide sequence hybridizes to nucleotides 98 to 886 of SEQ ID NO:1 under highly stringent conditions.

13. A polypeptide consisting of an amino acid sequence selected from the group consisting of amino acid residues 321 to 360 of SEQ ID NO:2 and an amino acid sequence having at least 85% sequence identity to residues 321 to 360 of SEQ ID NO:2.

14. An isolated DNA molecule comprising a nucleotide sequence encoding the polypeptide of claim 13.

15. The isolated DNA molecule according to claim 14, wherein said nucleotide sequence encodes the amino acid sequence corresponding to residues 321 to 360 of SEQ ID NO:2.

16. The isolated DNA molecule according to claim 15, wherein said nucleotide sequence is selected from the group consisting of nucleotides 1022 to 1141 of SEQ ID NO:1 and a nucleotide sequence which hybridizes to nucleotides 1022 to 1141 of SEQ ID NO:1 under moderately stringent conditions.

17. The isolated DNA molecule according to claim 16, wherein said nucleotide sequence hybridizes to nucleotides 1022 to 1141 of SEQ ID NO:1 under highly stringent conditions.

18. A vector comprising the isolated DNA molecule according to any of claims 2-7, 9-12 and 14-17.

19. A host cell transformed with the isolated DNA molecule according to any of claims 2-7, 9-12, and 14-17.

20. A composition comprising a polypeptide according to any one of claims 1, 8 and 13, and a pharmaceutically acceptable excipient, carrier, diluent or auxiliary agent.

21. A molecule containing an antigen binding portion of an antibody which specifically recognizes the polypeptide according to any one of claims 1, 8 and 13 with the proviso that said antibody does not cross-react with DAP kinase or ZIP kinase.

22. The antibody according to claim 21, which is a monoclonal antibody.

23. A single stranded RNA molecule complementary to at least a portion of the isolated messenger RNA molecule which is the transcription product of the DNA sequence encoding a polypeptide of SEQ ID NO:2, wherein said complementary single stranded RNA molecule is capable of hybridizing to said isolated messenger RNA to prevent its translation into said polypeptide of SEQ ID NO:2.

24. A method of neutralizing a messenger RNA molecule, which is the transcription product of the DNA sequence encoding a polypeptide of SEQ ID NO:2, comprising the step

of contacting the single stranded RNA molecule of claim 23 with the messenger RNA to neutralize the messenger RNA by hybridizing thereto and preventing its translation into the polypeptide of SEQ ID NO:2.

25. A method for screening individuals for a predisposition to cancer comprising the steps of:

(a) obtaining a sample of either genomic DNA from cells of the individual or cDNA produced from mRNA of said cells; and

(b) determining if there is a mutation in the nucleotide sequence of the DRP-1 gene.

26. The method according to claim 25 wherein a mutation in the nucleotide sequence of DRP-1 is determined by a process comprising the steps of:

(a) adding one or more nucleic acid probes to the sample of genomic DNA or cDNA, wherein each probe comprises a portion of the nucleotide sequence of DRP-1;

(b) providing conditions for hybridization between the nucleic acid probe or probes and the DNA of said samples; and

(c) determining on the basis of the hybridization whether there is a match between the sequence of the nucleic acid probe or probes and a sequence in the DNA of said sample, or whether there is a mismatch, a deletion or a mutation in the genomic DNA or cDNA and a predisposition to cancer of the tested individual.

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